ABSTRACT OF THE DISCLOSURE

In between network devices interconnected by plural optical channels, logical paths are defined according to upper traffic and also priority of the traffic. The network device comprises: a frame forming section for reading user packets out of a buffer section composed of plural buffers defined for the respective paths on transfer schedule, and forming path frames having a specified frame length and individual ordinal numbers with respect to each path; a switch for selecting output channels to equally distribute the path frames by round robin scheduling; and data transmitting means for transmitting data on the logical paths. Thus, it is made possible to realize a frame transfer system capable of performing data transmission, which satisfies QOS (Quality Of Service) required for user traffic, on the WDM networks connected by plural OCHs.